Applying ASTM E31 standard guidelines for modeling the Sao Paulo University Hospital computerized medical record: comparing the real world with the E1384-96 described standard model

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Background. In this paper we describe the application of the ASTM committee E31 standard guidelines for implementing a model for a computerized patient record [1]. Sao Paulo University Hospital is updating its clinical information systems and we intend to use international standards to facilitate the implementation and the integration of the new system [2]. This university hospital has six institutes that account for different specialties. Each of these institutes have some particularities regarding their own patient records. The objective of this project was to identify the information formats that were common to every institute, regardless their specialties, in order to design a general model. Our research hypothesis is that the guidelines described by standard E1384-96 can be applyed to help in the identification of such general characteristics and segments, in designing an object-oriented informational model and in saving time in the reengineering process. The methodology to test our hypothesis was: first, we have analysed the currently used paper forms of our hospital as the source material; second, we have built a current model; third, we compared the paper model with the E1384 guidelines. There are about three hundred forms used in the current patient record, plus about other three hundred forms for the administrative processes. The paper forms were grouped into classes of documents. Then, we have used the segments and the objects described by ASTM E31 reference standard E1384-96 for comparing the content and structure of the patient record found in our hospital with the computer-based model described by the standard.

System. Based on the E1384 standard and the paper forms, a model was abstracted and a prototype has been implemented. The core record is composed of fourteen segments, according to E1384, and about thirty main documents that are used by all institutes. It is in process of implementation. The prototype is planned to be placed for test by a clinical department when it is judged ready. The vocabulary server includes ICD for diagnoses, ATC (Anatomical and Therapeutic Chemicals) for drugs, AMB (brazilian medical association) for procedures, and SNOMED International for other segments.

Evaluation. The E1384 reference has an object-oriented described model, composed of eight macromodel objects: We verified that only the object number 5-"problem" could not be apllyed to the current paper model, and was substituted by "event". Confirming our research hypothesis, the E1384 guidelines could be used in the modeling and specification processes. The abstracted model was promptly understood by medical doctors and computer science professionals and accepted as a well defined set of technical specifications.

Conclusions. The guidelines described by E1384-96 were very valuable for helping us in the modeling process. It expedited the abstraction of an object-oriented model, the organization of the documents into groups and in the system's specification process. However, some adaptations had to be made in order to fit the real world of the hospital within the standard. Changes will be proposed to the comission of medical records of this hospital in order to eliminate some redundant documents or processes.

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References
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